Supreme Court, U.S.
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No. 98-1392

In The

Supreme Court of the United States

October Term, 1998

EMI GROUP NORTH AMERICA, INC.,

Petitioner,

v.

INTEL CORPORATION,

Respondent.

On Petition For A Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

BRIEF IN OPPOSITION

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QUESTIONS RESTATED

1. Whether the court may properly invoke prosecution history estoppel as to an asserted equivalent element of a process where the patentee expressly and specifically described its claim so as to exclude the asserted equivalent in order to overcome rejections based on prior art, and amended or cancelled all claims not so limited?

2. Is prosecution history estoppel, as a legal limitation upon the doctrine of equivalents, to be determined by the Court?

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PRELIMINARY STATEMENT

This Opposition will show in more detail (pp. 3-16, *post*) that application of prosecution history estoppel here fits squarely within the principles approved in *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S 17 (1997), and prior precedent of this Court. Briefly stated, the patent office rejected petitioner EMI's initial patent claims in view of prior art. To avoid prior art, EMI stressed that its process required differential thermal growth of masking oxide on the top and sides of the transistor gate, amended its claims to include that limitation, and cancelled claims not so limited. Having so amended and cancelled claims, EMI is estopped from claiming that Intel's processes – which lack that element – are equivalent.

The Court should not take this case for the following independently sufficient reasons.

One, the Petition never points out where EMI asked the lower court to decide the questions it offers up here. Although EMI posits "conflicting positions" within the Federal Circuit, and claims there are "two competing Federal Circuit standards" (Petition 13-14, 17), EMI did not request the Federal Circuit to resolve that purported conflict. This Court generally does not consider questions not raised below and this Petition gives no reason to depart from that practice here.

Two, this Court recently described, in *Warner-Jenkinson*, how courts determine whether prosecution history estoppel applies. The Court probes the reasoning behind the patent office insistence upon a change in the claim. Estoppel arises when the change was demanded for reasons related to patentability. *Warner-Jenkinson* placed the burden to explain reasons for an amendment on the patent holder, and established a presumption of estoppel absent explanation. EMI's first Question Presented thus

does not pose an unresolved issue. Rather, the Petition simply champions a rule inconsistent with both the burden placed on the patentee and the presumption, each established by *Warner-Jenkinson*, and seeks instead to require the opposing party show a clear and unequivocal relinquishment.

Three, EMI cites no reported decision which identifies the purported conflict within the Federal Circuit. There is no such conflict.

Four, it is not true that "only this Court can supply" a "clear standard" as the Petitioner claims (p. 14). The Federal Circuit can do so if it perceives the need. No intercircuit conflict exists here. Even EMI argues only for an internal conflict within the Federal Circuit. If there was one (and there is not), that Circuit could resolve it.

Five, the Petition does not present an appropriate case for this Court to reverse its position and adopt EMI's suggested "standard," even were it inclined to do so, because the result is the same even under EMI's standard. During prosecution, EMI expressly and unequivocally relinquished coverage of processes that did not differentially thermally grow an oxide thick enough to block an ion implant from entering the gate. It did so in response to rejections based on prior art, i.e., for reasons related to patentability. The Federal Circuit properly held EMI estopped from asserting coverage against processes, like Intel's, where the thermally grown oxide is *not* by itself thick enough to mask the gate during implantation.

Similarly, the decision below was correct, or at least did not depart so far from the accepted course of judicial proceedings as to call for exercise of this Court's supervisory powers.

Six, the second question regarding whether the court or a jury should resolve prosecution history estoppel was not raised below. Concerning that question, this Court in *Warner-Jenkinson* identified prosecution history estoppel as a "legal limitation" on the doctrine of equivalents, and held that "of course" such legal limitations are to be determined by the court. In its appeal to the Federal Circuit, EMI itself represented that the application of prosecution history estoppel "is a question of law subject to *de novo* review." IA 104a (EMI's Appeal Brief at 42).[1] EMI should not be heard to advance an inconsistent position before this Court.

STATEMENT OF THE CASE

The patent in question, U.S. Patent No. 4,486,943 (the "'943 patent"), is directed to a particular method of making metal oxide semiconductor field effect transistors, called "MOS transistors," used in the integrated circuits of computer memory and microprocessor chips. Such chips may contain anywhere from several hundred thousand to several million MOS transistors.

Claim 1 of the '943 patent (the only independent claim asserted by EMI on appeal) describes a specific process to make zero overlap transistors. Fig. 1, shown in pertinent part below, reflects the structure that results from first forming a differentially thermally grown oxide (18), then implanting ions into regions of the substrate that are not shielded by that oxide (20 and 22). A103.

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[1] References herein to "A ___" refer to the joint appendix for the Federal Circuit appeal. References to "PA ___" refer to the appendix to EMI's Petition and to "IA ___" refer to the appendix to this Opposition.

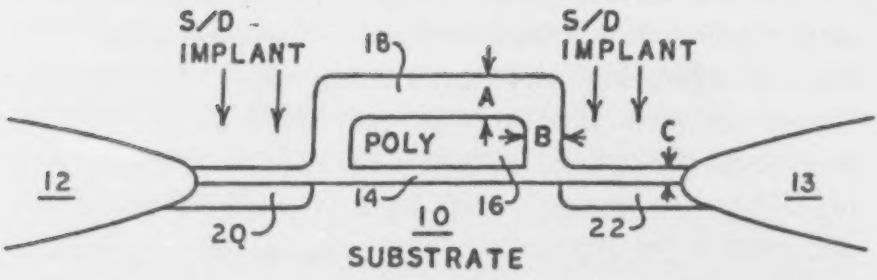

Figure 1 of '943 patent

In the "Differential Thermal Growth" embodiment described in the specification, an oxide is grown on both the top and sides of the doped polysilicon gate electrode to serve as an implant mask. A108-109. That oxide is much thicker over the gate electrode (dimensions A and B) than over the substrate (dimension C), hence the name "differential thermal growth." This differential in thickness permits ion implantation into the substrate while preventing ions from penetrating into either the gate or the portion of the substrate beneath the oxide. A109. The subsequent heating step, required to activate the ions, serves to drive the implant (20 and 22) into "perfect" alignment with the edge of the gate electrode (16), producing a zero overlap transistor, A108, col. 2, lines 14-16, as shown in Fig. 4 of the '943 patent below.

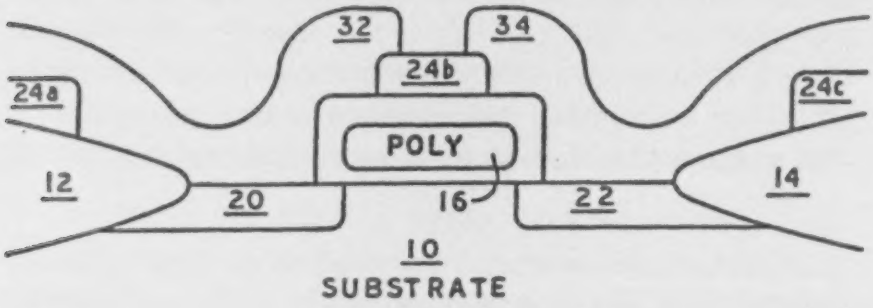

Figure 4 of '943 patent

When prosecuting the application which resulted in the '943 patent, the applicants discovered that zero-overlap transistor processes were not new. As a result, and as both the district court and Federal Circuit found, the claims had to be amended and narrowed to avoid several prior art patents. The limitations in the issued claims were no accident, but intentionally added by the applicants in order to secure allowance of the patent. When finally issued, the claims' scope was limited to forming the implant mask by differential thermal oxide growth (a term specially defined by the applicants) on both the top and sides of the gate electrode. At the same time, the applicants abandoned claims drawn to composite masks, that is, masks formed by two layers of material. PA 12a, 19a, 91a, 92a.

In Intel's accused processes, a thick dielectric is deposited (not grown) over a thin layer of oxide. EMI stipulated that Intel's processes do not grow an oxide mask thick enough to serve as an implant mask on the top of the gate. PA 12a. The conclusion of non-infringement, both literally and under the doctrine of equivalents, is therefore proper.

A. Before the Patent Office, Applicants Amended Their Claims to Overcome Prior Art Rejections and Limited Them in a Way That Excludes Intel's Processes.

Upon even a cursory reading of the '943 prosecution history, it is clear that the '943 claims were significantly amended – and limitations added – to avoid prior art processes. As noted, processes to make zero-overlap transistors were not new. Consequently, the prosecution of the '943 patent centered on the critical "differentially thermally growing" element (step (b)) which EMI relied on heavily to distinguish the prior art. This element in the issued claim reads as follows:

> (b) differentially thermally growing an oxide to serve as an implant mask having controlled thickness on both the top and sides of the gate electrode whereby a relatively thicker layer of oxide is developed on the top and sides of the gate electrode and a relatively thinner layer of oxide is developed on the intended source and drain regions of the substrate;

The '943 patent applicants originally submitted broad claims. Original claim 1, for example, specified "forming a gate electrode insulated from the substrate" followed by "forming an implant mask." A3945-3964, original claim 1. But it was well known in the art that implant masks could be made of different materials, such as oxide and nitride; that they could be grown, deposited, or grown in part and deposited in part; and that many techniques existed to define their shape. For that reason, the applicants were compelled to narrow their claims repeatedly through a series of amendments. With each amendment, the scope of the '943 claims became more and more limited with respect to step (b).

The Patent Office examiner initially rejected all of the original claims based on the Cohen patent. A4167-4180. The Cohen patent describes a process for precisely aligning the gate electrode with the source and drain. The Cohen process forms an overhanging masking layer (37) on top of the gate electrode (21), which serves to space the ion implant away from the gate electrode. Fig. 2B of the Cohen patent is reproduced in pertinent part below:

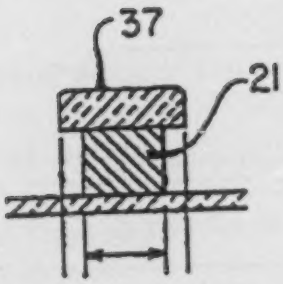

Figure 2B of Cohen

Rejecting the claims based on Cohen, the examiner stated that "the particular configurations of the implant mask appear to be no more than a matter of design choice." A3974-76. After that rejection, the applicants began focusing on the step for forming the implant mask as the purported inventive step of the process. To distinguish Cohen, the applicants amended all of the original claims to require first forming the gate electrode and then forming the implant mask. A3978-3989.

The PTO rejected those amended claims, however, based on the combination of Cohen and the Hunter patent. A3991-93. Hunter deposited an oxide layer for spacing the implanted regions from the sides of the gate electrode, by first forming an oxide on both the top and sides of the gate electrode, and then etching all the oxide off the top. Figs. 3 and 4 of the Hunter patent are reproduced in pertinent part below:

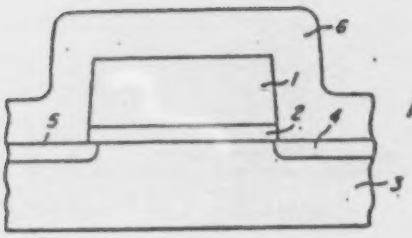

Fig. 3

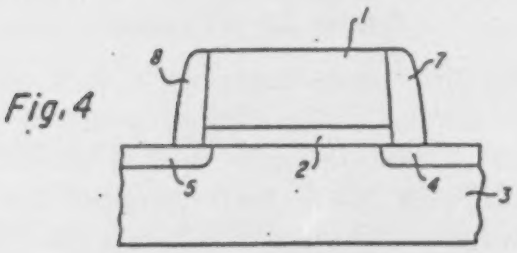

Fig. 4

Figures 3 and 4 of Hunter

Because Hunter clearly taught forming an implant mask on the sides of the gate, the applicants amended all the claims to require forming the implant mask "on both the sides and on the top" of the gate electrode. A4014-4018. When distinguishing Hunter, the applicants argued that it was critical to form an implant mask that was much thicker on top of the gate than over the substrate. They argued that such an implant mask enabled reduction of the oxide over the substrate (permitting ion implantation for the source and drain), while maintaining sufficient material on the top of the gate to mask the implant from entering the gate electrode. A4016-4018. Several of the pending claims (e.g., 3, 16, and 17) specified use of a differentially thermally grown oxide for forming such an implant mask. A4012, 4016-4018, 4022, 4027-4028. To distinguish Hunter, therefore, the applicants further limited the kind of implant mask to be formed in step (b) of the claims, in this case emphasizing

the importance of a thick mask being on the top of the gate.

The PTO rejected those claims over the Steinmaier patent in view of Cohen and the Stoffel patent in view of Cohen. A4159-4166. Steinmaier described growing an oxide (21) on the top and sides of a polysilicon gate (14) prior to an implant step, as shown in the relevant portion of Fig. 8 set forth below.

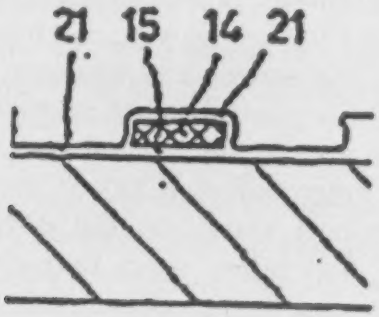

Figure 8 of Steinmaier

Stoffel described depositing oxide (32) on top of the gate (30), then growing an oxide (34) on the gate. Fig. 4, in pertinent part below, shows the resulting structure.

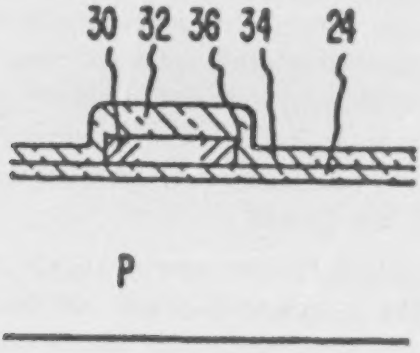

Figure 4 of Stoffel

The examiner found that Steinmaier taught growing a thermal oxide over the gate and substrate which is inherently thicker on the top and sides of the polysilicon gate than on the silicon substrate. The examiner similarly found that Stoffel taught growing a thermal oxide over the gate. A4038.

In response, the applicants amended the claims and submitted a prior art statement in which the critical distinction made over and over was that claim 1 requires a "differentially thermally grown implant mask of oxide on both the sides and top of the gate electrode. . . . " A4042, 4043, 4046. Like the earlier amendments made to distinguish Hunter, these amendments related to the type of implant mask that must be formed and how to make it. The applicants amended step (b) of claim 1 to require forming the implant mask via the differential thermal growth process, and relied upon that element to distinguish Steinmaier and Stoffel. A4057-4059. Equally important, the applicants argued that the oxide grown on the top and sides in Steinmaier was not a differentially thermally grown oxide as it was too thin to serve as an implant mask. A4074, A4077. At the same time, they cancelled claims covering composite implant masks, specifically, proposed claims 8 and 23. PA 19a, PA 91a.

Thus, consistent with how the applicants relied on the "differentially thermally grown oxide" element when distinguishing certain claims from Hunter, the applicants again relied on the differential thermal growth step to distinguish claim 1 from both Steinmaier and Stoffel. Following these amendments, and others, the Patent Office allowed the patent.

The prosecution history shows that with the prior art crowding in the applicants were forced to limit their patent claims to processes that differentially thermally grow an oxide to serve as an implant mask on the top and sides of the gate. As the Federal Circuit found, because

the applicants added this restriction to the claims to avoid prior art, EMI is estopped from asserting its patent against processes, like Intel's, which lack this element. PA 20a, 21a.

B. The District Court Granted Summary Judgment of Non-Infringement.

Following a two day *Markman* hearing, the district court granted summary judgment of no literal infringement of the patent claims by Intel's processes, and, in a separate opinion, granted summary judgment of non-infringement under the doctrine of equivalents. The district court construed the phrase in step (b) of claim 1 "differentially thermally growing an oxide to serve as an implant mask having controlled thickness on both the top and sides of the gate electrode" to require that the grown oxide must be thick enough on top of the gate electrode to serve as a mask for the implant step (d). PA 98a. EMI and Intel stipulated that Intel's processes did not thermally grow an oxide that can mask the top of the gate from implant:

> "TENA [EMI] and Intel stipulate that the thermally grown oxide layer on the top of the gate electrode in the P650, P651, and P852 (revs. 1-8) processes used by Intel to fabricate MOSFET transistors does not by itself mask the top of the gate electrode from the N+ and P+ implants at the energy levels used in said process for said implants."

PA 62a.[2]

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[2] The designations "N+" and "P+" refer to the polarity of the ions implanted into the gate electrode and the substrate during the fabrication of Intel's MOS transistors. PA 62a. In its Petition at Figure 4, EMI grossly distorts the relative dimensions of Intel's thick dielectric and much thinner oxide, and omits the

EMI conceded that under the district court's claim construction, Intel did not literally infringe. PA 88a. On August 29, 1996, based on the parties' stipulation, the district court granted Intel's motion for summary judgment of no literal infringement. PA 83a. The district court initially denied Intel's motion under the doctrine of equivalents on the mistaken belief that the applicants had not limited claim 1 to "differentially thermally growing an oxide to serve as an implant mask" in order to distinguish the prior art. PA 86a. The court later explained that its belief was based on a single statement by the prosecuting attorney on then-proposed claim 6 that "there might be other methods of establishing a dielectric with a differential growth process." PA 89a. Upon reconsideration, the district court concluded that given the entire prosecution, amendments and cancellation of claims 8 and 23, the issued claims were in fact limited, and that claim coverage to a composite implant mask had been abandoned. PA 92a. Based on the finding of prosecution history estoppel, the district court granted Intel's motion for summary judgment of noninfringement under the doctrine of equivalents. PA 92a.

C. The Federal Court Unanimously Affirmed the District Court's Judgment.

The Federal Circuit unanimously affirmed the district court's ruling. In its decision, the court first affirmed the district court's claim construction of step (b) of the '943 patent claims as requiring that the grown oxide itself be thick enough on the top of the gate to mask ion implantation, without augmentation by a deposited dielectric. PA

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fact, stipulated to by EMI, that Intel's grown oxide does not by itself mask the top of the gate. PA 16a.

13a.[3] In contrast to the claimed method, the Federal Circuit concluded that Intel's processes do not grow an oxide on the top of the gate that is thick enough to mask ion implantation. PA 16a (quoting stipulation). Because the Intel processes do not differentially thermally grow an oxide as required by step (b) of the claims, the court affirmed the ruling of no literal infringement. PA 15a-16a.

The Federal Circuit also affirmed the finding of no infringement under the doctrine of equivalents. The Federal Circuit concluded that during prosecution of the patent, EMI relinquished coverage of processes that do not differentially thermally grow an oxide to serve as an implant mask. PA 21a. This conclusion was based on a thorough reading of the extensive prosecution history and a careful study of the prior art, the reasons for the amendments, and the arguments the applicants made to distinguish the prior art. PA 18a-21a. The Court considered the rule that not every amendment or argument prevents a finding of infringement under the doctrine of equivalents, and nonetheless found that under the circumstances of this case a prosecution history estoppel arose. *See, e.g.*, PA 18a (Opinion at 20, citing *Litton Systems, Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1455 (Fed. Cir. 1998), among other cases).

The Federal Circuit pointed out that the applicants stressed to the examiner throughout the prosecution that the differential thermal growth of the masking oxide on the top and sides of the gate provided a patentable distinction from Hunter, Steinmaier and Stoffel, as well as other references. PA 20a-21a. The court also stated that the significance of a substantial differential in thickness of the thermally grown oxide of itself was emphasized by EMI in amendment and argument, accompanied by

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[3] The Federal Circuit also affirmed the district court's construction of the other elements of the claims. PA 13a-15a.

amendment or cancellation of claims not so limited. PA 21a. The court rejected EMI's position that the only important aspect of the '943 invention is the masking effect of the side oxide in light of EMI's "steadfast" argument that a patentable distinction from the prior art was the differentially thermally grown oxide to mask the top and sides of the gate, accompanied by amendments. *Id.* The court concluded:

> We thus affirm the district court's ruling that EMI is estopped to assert equivalency against Intel's combination of differentially thermally grown oxide and deposited dielectric on the gate when the differentially thermally grown oxide itself is not thick enough to mask the top of the gate from implant. EMI acknowledged to the examiner that, "Steinmaier is one of what must be a huge number of patents which relate to the formation of a transistor device," and in this congested art and in view of all of the cited references and the prosecution history, we agree that EMI is now estopped from asserting equivalency of Intel's composite dielectric, when the masking effect on the top of the gate is achieved only by an additional deposit of dielectric. The summary judgment of non-infringement under the doctrine of equivalents is affirmed.

PA 21a.

Contrary to EMI's assertions, the lower courts did *not* conclude that Intel's processes were equivalent to the '943 processes. Both the district court's and the Federal Circuit's opinions focused on step (b) of the asserted claims, which EMI admitted Intel did not use. Intel's processes do not include a step that is equivalent to step (b) and, in fact, do not meet several other limitations of the claims. Because the lower courts did not need to address the equivalents question, or those other limitations, to dispose of EMI's complaint, they did not do so.

Also contrary to EMI's suggestion in its Petition, the Federal Circuit's decision is *not* based on some generic "as a whole" statement or the fact that the art "is crowded." Rather, the Federal Circuit, like the district court, appropriately looked at the specific factual circumstances, the amendments and arguments made by the applicants, and the reasons for the amendments and arguments to conclude that EMI gave up the asserted claim coverage during prosecution.

D. The Federal Circuit Denied EMI's Petition for Rehearing and Suggestion for Rehearing en Banc.

After the Federal Circuit affirmed, EMI petitioned the Federal Circuit for rehearing and requested *en banc* review. IA 105a (Petition, filed October 13, 1998).[4] In its request, EMI argued that there were three "errors" in the panel's decision and that the errors affected the outcome. IA 111a (Petition at 2). Notably, EMI did *not* argue either of the Questions presented in the instant Petition for Writ of Certiorari. Instead, EMI claimed that the Federal Circuit's claim construction was inconsistent with an amendment made during prosecution of the '943 patent and that certain isolated excerpts of the opinion were inaccurate. IA 111a-112a (Petition at 2, 3). EMI sought *en banc* review because, it alleged, to the extent the panel relied on cancelled language that reliance was contrary to *United States v. Telectronics, Inc.*, 857 F.2d 778, 782-83 (Fed. Cir. 1988), and *Smith v. Snow*, 294 U.S. 1, 16 (1935). IA 123a.

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[4] For the Court's convenience, a copy of the non-confidential version of EMI's Petition for Rehearing and Suggestion for Rehearing *en Banc* is included in the appendix hereto. (IA 105a-124a) Also included in the appendix is Intel's Response to the Petition. (IA 125a-145a).

In fact, there was no error in the opinion at all. *See* Intel's Response Brief, IA 125a-145a. On November 30, 1998, the Federal Circuit denied EMI's combined petition for rehearing and suggestion for rehearing *en banc* without comment. PA 93a-94a.

REASONS TO DENY THE PETITION

I. PETITIONER EMI DID NOT RAISE BELOW THE QUESTIONS IT SEEKS TO PRESENT HERE.

This Petition never identifies where in the record EMI raised either of the Questions it asks this Court to decide. Nowhere does it show where it described for the district court, the Federal Circuit panel, or the entire bench on petition for rehearing *en banc* the now-asserted "conflicting positions" or "competing standards" it places before this Court as the reason to take up Question 1. Nor does it point out where it insisted below upon resolution of the prosecution history estoppel matter by jury (Question 2). The opinions below do not suggest that EMI alerted the district court or the Federal Circuit to the existence of the questions offered now.[5]

On certiorari to lower federal courts, this Court does not consider questions not presented to those courts, other than in exceptional cases. *E.g., Sisson v. Ruby*, 497 U.S. 358, 359 n. 1 (1990); *Delta Air Lines, Inc. v. August*, 450 U.S. 346, 362 (1981); *Adickes v. Kress & Co.*, 398 U.S. 144, 147 n. 2 (1970). This is settled practice. *See McGoldrick v.*

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[5] Because EMI did not put to the Federal Circuit the issues it now presses, that court never passed on those issues, and it cannot be said that the lower court decided "an important question of federal law that has not been, but should be, settled by this Court" or "that conflicts with relevant decisions of this Court." (Supreme Court Rule 10(c)).

Compagnie Generale Transatlantique, 309 U.S. 430, 434 (1940) ("[I]t is also the settled practice of this Court, in the exercise of its appellate jurisdiction, that it is only in exceptional cases, and then only in cases coming from the federal courts, that it considers questions urged by a petitioner or appellant not pressed or passed upon in the courts below."); *Blair v. Oesterlein Mach. Co.*, 275 U.S. 220, 225 (1927) ("This court sits as a court of review. It is only in exceptional cases, and then only in cases from the federal courts, that questions not pressed or passed upon below are considered here."); *Duignan v. United States*, 274 U.S. 195, 200 (1927) (same). This case is not of such exceptional nature to warrant overlooking EMI's failure to raise the questions below.

II. NO COMPELLING REASON EXISTS TO REVISIT THE LAW OF PROSECUTION HISTORY ESTOPPEL THAT THE *WARNER-JENKINSON* CASE RECENTLY ADDRESSED.

EMI's proposed bright line rule requiring an express and unequivocal surrender of subject matter runs afoul of *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997). In *Warner-Jenkinson*, the Court specifically addressed the matter of prosecution history estoppel for the doctrine of equivalents. It first reaffirmed long-standing patent law that a court must look into the reasons for an amendment during patent prosecution when determining whether prosecution history estoppel applies. Amendments made for reasons "related to patentability" create an estoppel. The Court in *Warner-Jenkinson* went further and held that the patentholder bears the burden to establish a reason for an amendment during prosecution. Where no explanation is established, a presumption arises that the patentholder made the amendment for reasons related to patentability and, thus, estoppel

applies. *Warner-Jenkinson*, 520 U.S. at 33-34. This presumption, said the court, is consistent with the role of claims in defining an invention and providing a public notice function. *Id.* Contrary to EMI's assertions, prosecution history estoppel is not premised solely on the notion of failure to exhaust administrative remedies. The public's ability to rely on the record established by the patentee plays an important role in the analysis.[6]

The position EMI advocates for applying prosecution history estoppel would turn *Warner-Jenkinson* on its head. EMI's rule would place the burden on the accused infringer to show an express and unequivocal surrender of subject matter. Under EMI's bright line rule, there would be no need to examine closely the reasons for an amendment, and no presumption of estoppel if a reason is not established. This Court considered the policies behind prosecution history estoppel in its recent rulings, and EMI advances no compelling reason to replow that ground.

The position EMI advocates is also plainly inconsistent with the many pre-*Warner-Jenkinson* Supreme Court cases concerning prosecution history estoppel. In *Keystone Driller Co. v. Northwest Engineering Corp.*, 294 U.S. 42, 48 (1935), for example, the Court unequivocally stated that where claims have been narrowed by amendments, estoppel can be inferred from the objective record of

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[6] *See, e.g., Insituform Tech., Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098, 1107-08 (Fed. Cir. 1996), *cert. denied*, 520 U.S. 1198 (1997) ("In examining the prosecution history in an estoppel analysis, we do not look to the subjective intent of the applicant and what the applicant subjectively believed or intended that he or she was giving up to the public. Rather, the standard for determining what subject matter was surrendered is objective and depends on what a competitor, reading the prosecution history, would reasonably conclude was given up by the applicant.").

claim amendments. "[W]here such broad claims are denied and a narrower substituted, the patentee is estopped to read the granted claim as the equivalent of those which were rejected." *Id.* Similarly, in *Smith v. Magic Kennel Club, Inc.*, 282 U.S. 784, 788 (1931), estoppel was found by inference based on the record of the amendments. The Court in these cases did not justify estoppel by determining whether the applicants "expressly and unequivocally" relinquished the assertedly equivalent subject matter. *See also Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 137 (1942) (holding that an amendment operates as a disclaimer of the difference before and after amendment to the claim, and must be strictly construed against the patentee.).

III. THERE IS NO CONFLICT WITHIN THE FEDERAL CIRCUIT AS TO THE STANDARDS FOR FINDING PROSECUTION HISTORY ESTOPPEL.

EMI's argument that Question 1 is certworthy depends on the assertion that a conflict exists within the Federal Circuit on the criteria for applying prosecution history estoppel. A review of the case law reveals no such conflict. Rather, there is a well-defined standard for applying prosecution history estoppel – certainly where, as in this case, a patent claim was amended in response to a rejection based on prior art.

When an applicant amends a patent claim for a reason "related to patentability," prosecution history estoppel applies. *Sextant Avionique, S.A. v. Analog Devices, Inc.*, 1999 WL 112040, at *10 (Fed. Cir. Feb. 26, 1999) (citing *Warner-Jenkinson*, 520 U.S. at 29-33); *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1460 (Fed. Cir. 1998) (in banc) ("estoppel may arise from matter surrendered as a result of amendments to overcome patentability rejections, [*see Warner-Jenkinson*] or as a result of argument to secure allowance of a claim."); *Litton*, 140 F.3d at 1456 ("A claim amendment to avoid prior art prevents recapture of

subject matter the applicant surrendered to obtain patent protection.")

Hence, when, as here, the patent holder amended claims in response to a rejection based on prior art, i.e., for reasons "related to patentability," prosecution history estoppel conclusively applies.

The cases cited by EMI for the proposition that "[i]n some cases, the Federal Circuit has held there can be no estoppel unless the defendant can identify in the prosecution history an unequivocal, express statement by the patentee that it was relinquishing the equivalent subject matter" (*see* Petition at 14) do not support that proposition. These cases (*Insituform, Cybor*) simply suggest that a patentee, on occasion, may not be completely estopped from asserting the doctrine of equivalents against subject matter that lacks a feature added by amendment.

Whether a patentee is still entitled to some range of equivalents must be decided on a case-by-case basis, after considering all the facts and circumstances pertaining to each particular case. The test is an objective one, inquiring under the unique facts of each case "whether a competitor would reasonably believe that the patentee had surrendered the relevant subject matter." *Cybor*, 138 F.3d at 1457 (in banc); *Pharmacia & Upjohn Co. v. Mylan Pharmaceuticals, Inc.*, 1998 WL 1016162, at *4 (Fed. Cir. March 18, 1999); *see also Insituform Tech., Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098, 1107-08 (Fed. Cir. 1996) ("the standard for determining what subject matter was surrendered is objective and depends on what a competitor, reading the prosecution history, would reasonably conclude was given up by the applicant"); *Mark I Mktg. Corp. v. R.R. Donnelley & Sons Co.*, 66 F.3d 285, 291 (Fed. Cir. 1995), *cert. denied*, 516 U.S. 1115 (1996) ("The standard for determining whether particular subject matter was relinquished is an objective one that depends on what a competitor reasonably would conclude from the patent's prosecution history"); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948,

952 (Fed. Cir. 1993) ("The legal standard for determining what subject matter was relinquished is an objective one, measured from the vantage point of what a competitor was reasonably entitled to conclude, from the prosecution history, that the applicant gave up to procure issuance of the patent"); *Hoganas*, 9 F.3d at 952 n.15 ("Our precedent dealing with this specific question recites that the test is measured from the vantage point of a reasonable competitor").

Before the Federal Circuit, EMI itself advocated the reasonable competitor standard:

> "The prosecution history **would not lead a competitor to believe** that the implant mask of claim 1 is limited to only a differentially thermally grown oxide, thereby excluding any additional steps or enlargements of the implant mask. The Applicants made no such statements, nor can any be implied or reasonably **relied upon by a competitor**."

IA 151a (EMI's Reply Brief at 22-23 (bolding added, underscore original)).

In short, cases in which claims are amended to overcome a prior art rejection do not turn upon a test requiring proof that the patentee expressly and unequivocally relinquished the allegedly equivalent subject matter.

The language EMI now seizes on, "express and unequivocal," originates from decisions where arguments were made by a patentee to the Patent Office *without* amendments to the claims. *See Pharmacia*, 1998 WL 101612, at *4. The Federal Circuit in *Litton* explains:

> "This court has acknowledged that even arguments made during prosecution without amendments to claim language – if sufficient to evince a clear and unmistakable surrender of subject matter – may estop an applicant from recapturing that surrendered matter under the

> doctrine of equivalents. . . . This principle presupposes that the applicant has made the surrender unmistakable enough that the public may reasonably rely on it."

Litton, 140 F.3d at 1458 (citing *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 952 (Fed Cir. 1993)); *see, e.g., Pharmacia*, 1998 WL 1016162, at *5 ("we agree with the district court that these statements would reasonably be interpreted as a 'clear and unmistakable' surrender of micronized glyburide compositions that do not contain spray-dried lactose.")

This situation does not apply here. EMI made several amendments to the claims *in addition to* arguments to the Patent Office. When arguments are made in combination with an amendment, as is common, "the scope of estoppel is a product of the effects of both factors working in concert." *Litton*, 140 F.3d at 1462. Specifically, in response to rejections, EMI added the limitation of "differentially thermally growing an oxide on both the top and sides of the gate . . . " and steadfastly argued that this limitation distinguished the claimed invention from the prior art. PA 21a.

EMI's failure to cite a single reported decision that identifies the so-called "irreconcilable" conflict confirms that no such conflict exists.[7] EMI's reliance on Mr. Chisum's treatise to suggest two competing "lines of authority," (Petition at 16), is misplaced. Mr. Chisum was actually discussing the issue whether a claim element receives *any* range of equivalents once events giving rise to an estoppel occur. Mr. Chisum goes on to explain that

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[7] It is also unlikely that there can be such "irreconcilable" conflict within the Federal Circuit, as EMI alleges, given that each Federal Circuit panel decision is binding on future cases, unless overturned by the court *en banc*. *See UMC Elecs. Co. v. United States*, 816 F.2d 647, 652 n.6 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1025 (1988).

the Federal Circuit, sitting in banc, adopted the "flexible" approach, consistent with prior law, which holds that amendments do not invariably preclude all equivalents but require examination of the amendments, arguments, and the reasons for the change under the given circumstances to determine what subject matter was relinquished. 5A *Chisum on Patents*, § 18.05[3][c], at 18-507 (1998) (citing *Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc.*, 62 F.3d 1512 (Fed. Cir. 1995) (in banc)). Mr. Chisum adds that cases after *Warner-Jenkinson* follow the same approach. *Id.* at 18-509 to 18-516 (describing *Hughes Aircraft, Cybor,* and *Litton*).[8] Hence, there is no conflict even as to this issue, an issue understandably not raised by EMI.[9]

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[8] On March 1, 1999, this Court denied review in *United States v. Hughes Aircraft Co.* (No. 98-871). In *Hughes*, the Federal Circuit held that the Supreme Court's *Warner-Jenkinson* decision does not require that prosecution history estoppel act as an absolute bar precluding all equivalents regardless of subject matter surrendered. *Hughes Aircraft Co. v. United States*, 140 F.3d 1470, 1476-77, *cert. denied*, 119 S.Ct. 1112 (1999).

[9] EMI also seems to suggest that unless the assertedly equivalent subject matter was found within the prior art references cited during prosecution of the patent, there can be no estoppel. (Petition at 19). EMI is clearly wrong on the law. The limits imposed by prosecution history estoppel "can be, and frequently are, broader than those imposed by the prior art." *Haynes Int'l, Inc. v. Jessop Steel Co.*, 8 F.3d 1573, 1579 (Fed. Cir. 1993). If Intel were practicing the prior art, it would have an absolute defense and "prosecution history would be irrelevant." *Sextant*, 1999 WL 112040, at *9. Prior art and prosecution history estoppel provide independent policy oriented limitations on the doctrine of equivalents. *Id.*

IV. ANY "CONFLICT" IS AT MOST BETWEEN DECISIONS OF THE FEDERAL CIRCUIT WHICH THAT COURT CAN RESOLVE

The Petition seeks to describe what it calls "conflicting positions," "two approaches," "two competing Federal Circuit standards," and suggests that "only this Court can supply" a "clear standard." Petition at 13-14, 16, 17. Remarkably, all those positions, or approaches, or standards, are said to arise within the Federal Circuit; EMI claims only that the "Federal Circuit's jurisprudence is *internally* inconsistent." Petition at 12, emphasis added.

Intracircuit conflicts are not ordinarily a sufficient basis on which to grant certiorari. *Davis v. United States*, 417 U.S. 333, 340 (1974). This Court practices restraint in resolving internal circuit conflicts. *See Wisniewski v. United States*, 353 U.S. 901, 902 (1957) ("It is primarily the task of a Court of Appeals to reconcile its internal difficulties."). *See also* 23 *Moore's Federal Practice* § 510.21[2], at 510-15 (3d ed. 1998) ("Supreme Court Rule 10(a) contemplates a conflict between decisions of two or more court of appeals, *and not conflicting decisions of panels within a circuit. These conflicts are better resolved by the court of appeals itself, sitting en banc.*") (emphasis added).

The reasons for this Court to avoid intervening with internal conflicts of a Circuit Court of Appeals apply with particular force to the Federal Circuit in "this area of its special expertise." *Warner-Jenkinson*, 520 U.S. at 40. This Court need not and should not undertake to resolve in the first instance a purported conflict within one Court of Appeals, which possesses specialized knowledge and can bring it to bear *en banc* on the issue, particularly where the petitioner never identified the conflict to that court or sought resolution there.

V. THIS PETITION DOES NOT PRESENT AN OCCASION TO ADOPT EMI'S RULE REQUIRING AN "UNEQUIVOCAL" SURRENDER, BECAUSE TO DO SO WOULD NOT CHANGE THE RESULT IN THIS CASE.

Even if this Court were to adopt EMI's position on the standard for applying prosecution history estoppel, the result here would not change. As explained above, during prosecution of the '943 patent, EMI expressly and unequivocally relinquished coverage of processes that did not differentially thermally grow an oxide thick enough to block an implant from entering the gate. This relinquishment came in direct response to rejections based on the prior art, i.e., for reasons "related to patentability." *Warner-Jenkinson*, 520 U.S. at 31.

As the Federal Circuit explained, "EMI specifically argued that the differentially thermally grown oxide on top of the gate masks the gate during the implant deposition of claim step (d), in response to rejections on prior art. The applicant had stressed to the examiner throughout the prosecution that the differential thermal growth of the masking oxide on the top and sides of the gate provided a patentable distinction from Hunter, Steinmaier, and Stoffel, as well as other references. The significance of a substantial differential in thickness of the thermally grown oxide of itself was emphasized by EMI in amendment and argument, accompanied by amendment or cancellation of claims not so limited." PA 20a-21a.

The Court of Appeals properly affirmed that EMI is estopped from asserting coverage against processes, like Intel's, where the thermally grown oxide is *not by itself* sufficiently thick to mask the top of the gate. Indeed, the facts of this matter fall squarely within bedrock prosecution history estoppel law laid down by this Court some 100 years ago:

> "When an applicant for a patent to cover a new combination is compelled by the rejection of his application by the patent-office to narrow his claim by the introduction of a new element, he cannot after the issue of the patent broaden his claim by dropping the element which he was compelled to include in order to secure his patent."

Shepard v. Carrigan, 116 U.S. 593, 597 (1886); *Smith v. Magic City Kennel Club, Inc.*, 282 U.S. 784, 789 (1931); *I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429, 443 (1926).

In the face of all this, EMI argues that "prosecution history estoppel, properly defined, should play no role in this case." (Petition at 19.) EMI suggests that the Federal Circuit based its decision on irrelevant references to the prosecution history, e.g., the statement of reasons for claim amendments cited by the district court, and on EMI's statement that "there must be a huge number of patents which relate to the formation of a transistor device." (*E.g.*, Petition at 11). Intel disagrees with this view of the Federal Circuit's decision, and of the district court's decision, and refers to its Statement of the Case which demonstrates that the lower courts properly applied estoppel by looking to the reasons for rejection of EMI's claims, the amendments made to get around those rejections, and the reasons given for those amendments.

This is not a case of clear equivalents with only estoppel standing in the way of infringement, as EMI asserts. (Petition at 18). EMI states repeatedly that the Federal Circuit and the district court "found" that Intel's processes were not substantially different from those claimed in the '943 patent. (Petition at 8 and 10). This is not true. The district court did not reach the issue of substantial differences between Intel's processes and the '943 patent processes, and the issue was not before the Federal Circuit on appeal.

EMI's reliance on the district court's initial ruling on doctrine of equivalents contained within the order dated August 29, 1996, is misplaced. PA 84a-86a. That interlocutory decision on Intel's motion for summary judgment was, of course, superseded by the subsequent order on reconsideration dated October 31, 1996, in which the district court found no infringement due to prosecution history estoppel. PA 87a-92a. That the district court did not expressly "disavow" statements made in the prior order does not convert them into "facts" on appeal.

The statements by the district court on which EMI relies do not support EMI's contention that Intel's processes are "equivalent," in any event. The district court's language, like the Federal Circuit's, was introductory and equivocal. The court stated, "It *seems* that this combination *could* perform substantially the same function . . . .Intel does not *appear* to dispute that a nitride/oxide composite layer could serve as an implant mask for step (d) of claim 1 . . . " PA 84a. More importantly, the statements by the district court and Federal Circuit concern a single aspect of a single element of the claims, step (b). They do not address other elements of the claims, which Intel maintained below it did not meet. The district court certainly made no "findings" that Intel's processes meet these other limitations.

At best, EMI's assertions about the district court's opinions are academic, because review is not warranted "when the asserted error consists of erroneous factual findings or the misapplication of a properly stated rule of law." (Supreme Court Rule 10).

VI. THE DETERMINATION OF PROSECUTION HISTORY ESTOPPEL IS A LEGAL QUESTION, DONE HERE PROPERLY ON SUMMARY JUDGMENT.

EMI poses the second question for review as "Where competing inferences concerning estoppel can be drawn

from the prosecution history, is the choice between them for the court or the jury to resolve?" (Petition at (i).) The clear answer is "the court." EMI cites not a single decision holding otherwise, nor any persuasive argument for reversing this long-standing rule.

Not only did EMI fail to raise this Question below (which is reason enough to deny the Petition), EMI specifically *advocated* to the Federal Circuit that application of prosecution history estoppel is a question of law reviewed *de novo* on appeal:

> "**The application of prosecution history estoppel is a question of law subject to de novo review.** *See Mark I [Mktg. Corp. v. R.R. Donnelley & Sons*, 66 F.3d 285, 291 (Fed. Cir. 1995)]; *Insituform Tech., Inc. v. Cat Contracting, Inc.*, 40 U.S.P.Q.2d 1602, 1609 (Fed. Cir. 1996)."

IA 104a (EMI's Opening Appeal Brief at 42 (emphasis added)). EMI now appears before this Court and argues that "a jury should weigh that conflicting evidence." (Petition at 24). EMI should not be heard to advocate a legal position diametrically opposed to that it argued to the Court of Appeals.

Prosecution history estoppel has long been a question of law, reviewed *de novo* on appeal. *See I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429, 433-34 (1926) ("The question of infringement as here presented turns upon *matters of law arising out of a file wrapper defense . . .* "); *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1460 (Fed. Cir. 1998) (*in banc*) ("Prosecution history estoppel is a legal question subject to de novo review on appeal."); *Mark I Mktg. Corp. v. R.R. Donnelley & Sons*, 66 F.3d 285, 291 (Fed. Cir. 1995), *cert. denied*, 516 U.S. 1115 (1996).

EMI argues that "[i]n *Warner-Jenkinson*, the Court expressly left open the question 'whether, or how much of, the application of the doctrine of equivalents can be resolved by the court.' " (Petition at 23, quoting *Warner-Jenkinson*, 520 U.S. at 38). That may be. However, that

statement, which relates to "whether application of the doctrine of equivalents is a task for the court or the jury," has no bearing on whether the court decides prosecution history estoppel.

With respect to prosecution history estoppel, the Court in *Warner-Jenkinson* identified it as a *legal* limitation: "We can readily agree with petitioner that Graver Tank did not dispose of prosecution history estoppel as a legal limitation on the doctrine of equivalents." 520 U.S. at 30. The Court further held that legal limitations on the doctrine of equivalents, such as prosecution history estoppel, are "of course" to be determined *by the court*:

> "**Of course, the various legal limitations on the application of the doctrine of equivalents are to be determined by the court,** either on a pre-trial motion for partial summary judgment or on a motion for judgment as a matter of law at the close of the evidence and after the jury verdict. Fed. Rule Civ. Proc. 56; Fed. Rule Civ. Proc. 50. **Thus, under the particular facts of a case, if prosecution history estoppel would apply or if a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve.**"

Warner-Jenkinson, 520 U.S. at 39 n. 8 (emphasis added). This portion of the Court's decision from *Warner-Jenkinson* answers Question No. 2.[10]

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[10] EMI attempts in vain to manufacture "inconsistent" rulings of the Federal Circuit by misconstruing the Federal Circuit's rationale for remanding certain cases. (Petition at 22-23). In *Hebert v. Lisle Corp.*, 99 F.3d 1109 (Fed. Cir. 1996), the Federal Circuit actually undertook the task of resolving the prosecution history estoppel issue *as a matter of law*. *Id.* at 1117-1118. The court remanded the cause because it could not

The answer to the second Question is thus clear. The court decides the extent to which prosecution history estoppel applies.

CONCLUSION

EMI's petition for writ of certiorari should be denied.

Respectfully submitted,

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decide the issue absent additional "development of the evidence." *Id.* Similarly, in *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558, 1566 (Fed. Cir. 1990), *cert. dismissed*, 499 U.S. 955 (1991), the Federal Circuit vacated summary judgment because there were "other possible interpretations of Dr. Li's prosecution arguments" than the one relied upon by the district court to find estoppel. The Federal Circuit remanded the case "*to the district court* to determine the intent and effect of the arguments made during the prosecution of A-claim 18." *Id.* at 1567 (emphasis added). *See also Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 871-72 (Fed. Cir. 1985), *overruled on other grounds by Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 1067-68 (Fed. Cir. 1998) ("the *district court* may, on remand, want to take additional evidence . . . and make additional findings underlying the question of prosecution history estoppel."). Nothing in the cases cited by EMI suggests that the Federal Circuit contemplates prosecution history estoppel to be a jury question.

APPENDIX F

CONFIDENTIAL
BRIEF FOR APPELLANT EMI GROUP
NORTH AMERICA, INC.

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

APPEAL Nos. 97-1137, -1153

EMI GROUP NORTH AMERICA, INC.,
Plaintiff/Appellant,

v.

INTEL CORPORATION,
Defendant/Cross-Appellant.

APPEAL FROM AN ORDER AND JUDGMENT OF THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE IN 95-CV-199 ENTERED NOVEMBER 1, 1996, AND NOVEMBER 4, 1996, JUDGE RODERICK R. MCKELVIE

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CERTIFICATE OF INTEREST [FED. CIR. R. 47.4]

Counsel for the Plaintiff/Appellant EMI Group North America, Inc. certifies the following:

1. The full name of every party or amicus represented by me is:

EMI Group North America, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Not Applicable

3. The parent companies, subsidiaries (except wholly-owned subsidiaries), and affiliates that have issued shares to the public, of the party or amicus curiae represented by me are:

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4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this Court are:

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* * *

III. EMI'S CLAIM OF INFRINGEMENT OF CLAIM 1 UNDER THE DOCTRINE OF EQUIVALENTS IS NOT PRECLUDED BY THE PROSECUTION HISTORY

Prosecution history estoppel should only bar the patentee from recapturing that subject matter surrendered by the patentee during prosecution in order to promote allowance of the claims. *Mark I Mktg. Corp. v. R.R. Donnelley & Sons*, 66 F.3d 285, 291 (Fed. Cir. 1995), *cert. denied*, 116 S.Ct. 917 (1996). The application of prosecution history estoppel is a question of law subject to *de novo* review. See *Mark I*, 66 F.3d at 291; *Insituform Tech, Inc. v. Cat Contracting, Inc.*, 40 USPQ2d 1602, 1609 (Fed. Cir. 1996).

The court erred by holding that EMI surrendered the subject matter of the accused Intel processes by canceling pending claims 8 and 23, and amending issued claim 1.

* * *

APPENDIX G

NON-CONFIDENTIAL
PLAINTIFF-APPELLANT EMI GROUP NORTH AMERICA, INC.'S COMBINED PETITION FOR REHEARING AND SUGGESTION FOR REHEARING *IN BANC*

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

APPEAL Nos. 97-1137, -1153

EMI GROUP NORTH AMERICA, INC.,

Plaintiff/Appellant,

v.

INTEL CORPORATION,

Defendant/Cross-Appellant.

APPEAL FROM AN ORDER AND JUDGMENT OF THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE IN 95-CV-199
ENTERED NOVEMBER 1, 1996,
AND NOVEMBER 4, 1996

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October 13, 1998

CERTIFICATE OF INTEREST

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

APPEAL Nos. 97-1137, -1153

EMI GROUP NORTH AMERICA, INC.,
Plaintiff/Appellant,

v.

INTEL CORPORATION,
Defendant/Cross-Appellant.

APPEAL FROM AN ORDER AND JUDGMENT
OF THE UNITED STATES
DISTRICT COURT FOR THE DISTRICT
OF DELAWARE IN 95-CV-199
ENTERED NOVEMBER 1, 1996,
AND NOVEMBER 4, 1996

The undersigned, counsel of record for the Plaintiff/Appellant, EMI North America, Inc., certifies the following in compliance with Fed. Cir. R. 47.4.

(1) The full name of every party or amicus represented by me is:

EMI Group North America, Inc.

(2) The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Not Applicable.

(3) The parent companies, subsidiaries (except wholly-owned subsidiaries), and affiliates that have issued shares to the public, of the party or amicus curiae represented by me are:

EMI Group plc.

(4) The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this Court are:

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REQUIRED STATEMENT FOR SUGGESTION FOR REHEARING *IN BANC*

Based on my reasoned and studied professional judgment, I believe the panel decision is contrary to the following decision of the Supreme Court of the United States or the precedent of this court:

1. *Smith v. Snow*, 294 U.S. 1, 55 S.Ct. 279, 79 L.Ed. 721 (1935); and
2. *United States v. Telectronics, Inc.*, 857 F.2d 778 (Fed. Cir. 1998), *cert. denied*, 490 U.S. 1046 (1989).

Respectfully submitted,

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CONFIDENTIAL INFORMATION REDACTED

I. PETITION FOR RECONSIDERATION

A. Introduction

Petitioner EMI respectfully submits that the Court's Opinion and Judgment entered September 29, 1998 are premised on three clear and substantial errors that were outcome determinative collectively and individually.

One error is that the Court's decision violates its own clear precedent in construing claim 1 of Patent No. 4,486,943 ("the '943 patent") based upon an argument made by EMI's attorney to the Patent Office with respect to a limitation of masking the *top of the gate* during implantation of the source/drain region – when in fact EMI canceled that limitation from a differently worded,

early version of claim 1 and never again introduced it into the several subsequent versions of claim 1 or argued it in the Patent Office.

Another claim construction error is the Court's ruling that the term "doped" gate in clause (a) of claim 1 *implicitly requires* masking the top of the gate during implantation of the source/drain – when in fact the '943 patent explicitly contradicts that deduction. Intel conceded that claim 1 did not require the *top of the gate* to be masked during the source/drain implantation at the *Markman* hearing, and the district court agreed with EMI and Intel that the claim did not so require.

Yet another error is the Court's ruling that Intel's process masks the *top* of the gate during implantation of the source/drain and further that EMI argued this as equivalent to the claimed process – when in fact **REDACTED REDACTED** EMI did not so argue (and thereby imply that the claimed process also calls for masking the top of the gate during implantation).

These errors were outcome determinative because the Court affirmed a summary judgment of non-infringement by mistakenly requiring masking the *top of the gate* during the source/drain implant, due to an incorrect attribution to the issued claim 1 of the earlier-canceled limitation to implanting the source/drain regions "while such implant mask is on the top" of the gate, combined with an incorrect deduction as to the effect of calling for a "doped" gate in clause (a) of claim 1, and a related mistake as to the nature of the accused Intel process.

Claim 1 of the '943 patent teaches the use of a differentially grown oxide mask on the *lateral sides* of the gate

to shield underlying portions of the substrate that extend out to the left and to the right from the gate, to result in a "gap" that helps achieve an exact placement of the source/drain regions in a subsequent heat driving step and thereby reduce Miller capacitance. A108 (SA7) (at col. 2, lines 9-16), A109 (SA8) (at col. 3, lines 34-44). Having an implant mask on top of the gate during implantation of the source/drain does not produce the "gap" of claim 1, nor is it a "problem" to implant a previously doped gate with the same type dopant used to implant the source/drain. In fact, dependent claim 16 of the '943 patent explicitly teaches the example of implanting a previously doped gate, **REDACTED** process. A3962 (SA12).

Whether the masking layer on the sides of the gate is only oxide or another material is added as well, the thickness of that mask layer only affects the lateral extent of the shielded portions of the substrate; the *height* of the mask layer along the sides of the gate is what determines if the underlying substrate to the left and to the right of the gate will or will not be shielded from implantation.

B. The Three Errors

Error 1: Attribution to Claim 1 of a Limitation Canceled From the Claim Early in Prosecution

The opinion states:

> In all events, it is clear that the oxide grown on *top* of the gate must be thick enough to serve as a mask for the gate *during* the implant step (d), for this was the basis on which EMI overcame

> the final rejection on the Cohen and Steinmaier references; . . . Op. at 14-15; emphasis added.
>
> * * *
>
> EMI specifically argued that the differentially thermally grown oxide on *top* of the gate masks the gate *during* the implant deposition of claim step (d), in response to rejections on prior art. Op. at 23; emphasis added.
>
> * * *
>
> We thus affirm the district court's ruling that EMI is estopped to assert equivalency . . . when the differentially thermally grown oxide itself is not thick enough to mask the top of the gate from implant. Op. at 24.

In fact, in prosecution EMI did seek to distinguish an early version of claim 1 from prior art by the presence of an implant mask on top of the gate during implantation of the source/drain, but this occurred only when that early version of claim 1 actually contained that limitation, as it recited implanting the source/drain regions

> *while* such implant mask is on the *top* and sides of the gate electrode. A3998, 4015-18; emphasis added.

EMI so argued in response to a non-final office action rather than the final action, and sought to distinguish over Hunter, not Cohen, and certainly not Steinmaier – a reference that had not yet been cited. A4015-18.

Most important, EMI canceled this limitation from claim 1 in the next amendment. A4048. In the several subsequent revisions of claim 1, EMI never again introduced a limitation to the effect that the *top* of the gate is

masked *during* implantation of the source/drain regions, or argued a difference from the prior art on that basis. A2482.1, 2483.

Therefore, the Court erroneously attributed to issued claim 1 a limitation present only in an early version of the claim, as well as an argument that EMI never made regarding the later versions of claim 1, and thereby erroneously read the canceled limitation back into claim 1, as issued. *United States v. Telectronics, Inc.*, 857 F.2d 778, 782-83 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

This error infects other support for the Court's holding. For example:

> EMI stressed to the PTO that in its invention failure to totally mask the gate would result in a "severe problem." Op. at 12.

In fact, the only time EMI so argued was when the early version of claim 1 actually recited that the source/drain implantation takes place "while such implant mask is on the top and sides of the gate" – a limitation that EMI canceled well before allowance of claim 1. A3998. 4017-18, 4048.

In addition, the panel fails to appreciate that the "severe problem" was limited in that argument to CMOS applications in which the dopant for the gate happens *not* to be the same as the dopant for the substrate. A4016. But, the example pertinent to this appeal is when **REDACTED** the illustration of the Intel process reproduced and discussed below at p. 12, where **REDACTED** EMI'S attorney described the nature of the problem and the fact that it is a problem pertaining to CMOS applications:

> *[T]he oxide has been completely removed from the top of the gate electrode,* laying bare the gate before the source and drain dopants are implanted. This is disadvantageous in the case of CMOS applications where the dopant for the gate is different from the dopant for the source and drain regions. A4016; emphasis in original.

As another example of the panel's mistaken reliance on a limitation that EMI had canceled from an early version of claim 1, the Opinion states:

> EMI drew the examiner's attention to the fact that, in contrast to Steinmaier, the *claimed* differentially thermally grown oxide must be sufficiently thick to prevention ion implantation. Op. at 20-21.

By mistakenly attributing the argument regarding the early version of claim 1 to a distinction over the yet-to-be-cited Steinmaier, Op. at 14-15, the Court again attributes to issued claim 1 a limitation EMI canceled from the claim several versions earlier. A4048.

The actual argument EMI made regarding Steinmaier and differential oxide growth is that Steinmaier does not show the difference in thickness resulting from the then claimed step of "controlling ambient conditions to promote a high rate of oxidation on the top and sides of the doped polysilicon gate compared to the silicon substrate." A4048, 4057. However, EMI thereafter canceled from claim 1 this new limitation as well. A4094.

In the end, EMI's attorney argued for allowance of claim 1 only on the basis of distinctions other than those on which the panel mistakenly relie to limit claim 1 to

requiring masking the top of the gate during implantation of the source/drain. The focus of the argument that resulted in allowance is the newly added anisotropic etching step, A4094, when combined with differential thermal growth of an oxide, for the purpose of establishing a zero drain overlap – a combination not found in the prior art including Hunter, Cohen, Steinmaier and Stoffel:

> With respect to the patentability of claim 1, for example, applicants consider that the prior art fails to teach, suggest or even disclose the combination of differential thermal growth (by oxidation) in combination with anisotropic etching for the purpose of establishing a zero drain overlap part. A4104.

Error 2: "Doped" in Clause (a) Implicitly Requires Masking During Implant of the Source/Drain

The Opinion states:

> We observe that EMI's claims all state that the gate electrode is already "doped" before implantation of the source/drain region, see clause (a) of claim 1, thus *requiring* that the *top* be masked during implantation of the source/drain regions. Op. at 13-14; emphasis added.
>
> * * *
>
> [T]he claim also requir[es] that the gate electrode had already been doped, clause (a), thus *implicitly requiring* masking during implant of the source/drain regions. Op. at 23; emphasis added.

But, the deduction that calling for a doped gate in clause (a) requires masking the top of the gate during

implantation of the source/drain is erroneous. The '943 patent explicitly denies it. For example, claim 16 in the patent calls for implanting while the *top* of the gate is *not* masked, thus demonstrating that reciting a "doped" gate in the first clause of independent claim 15 does not require the top of the gate to be masked in the implanting recited in the fourth clause.[1] A4099, 3962 (SA12). Both parent claims 1 and 15 call for a differential thermal growth of an oxide in the second clause. A111, 4099, 3962 (SA12). As another example, claim 4 calls for the opposite – masking the top of the gate for the implantation step. The fact that claim 4 depends from claim 1 further demonstrates the claimed process need not use a mask on top of the gate, despite calling for a "doped" gate in clause (a). A111 (SA10). A single CMOS (complementary MOS) chip may have transistors formed using each of these examples.

Thus, while the early version of claim I called for implanting the source/drain "while such implant mask is on the top" of the gate and thereby excluded the example of claim 16, by cancelling that limitation from claim 1, A4048, EMI broadened claim 1 to include the case when the gate is doped in clause (a), but the top of the gate need not be masked during the implantation of clause (d).

---

[1] Claim 16 reads as follows:

A method as set forth in claim 15 wherein the source/drain region is implanted while *the top of the gate electrode is substantially free of dielectric for doping the gate electrode during source/drain implantation.* Emphasis added.

The Opinion, therefore, mistakenly concludes that the language in clause (a) of claim 1 requires masking the top of the gate during the source/drain implantation of the source/drain region and that claim 1 is so limited.

On this point, Intel conceded, and the district court agreed, that it would be inconsistent with the anisotropic etch step of claim 1 and dependent claim 4 to require the oxide layer to be present on top of the gate during implanting the source/drain. A22-23 ("Intel has never asserted this contention. . . . Moreover, requiring the oxide layer to remain on top of the gate would be inconsistent with the anisotropic etching step in claim 1 . . . "). The panel's opinion does not mention or give effect to the anisotropic etching step (clause (c) in claim 1) in its construction of the implant step (clause (d)).

Clause (b) of claim 1 calls for an oxide to serve as *an* implant mask, where the oxide is thicker on the top and sides of the gate than on the substrate, but clause (d) states that "said" implant mask shields a portion of the substrate to the side of the gate – thus demonstrating that the service that the oxide provides is to form an implant mask at the *sides* of the gate, without a restriction to also having to provide an implant mask on top of the gate. *See also* EMI's opening brief at 22-28 and reply brief at 13-18.

Error 3: Intel Masks the Top of the Gate During Implantation of the Source/Drain

The Opinion states:

> This aspect is relevant to the issue of infringement, for Intel adds dielectric to the *top* of the gate in order to achieve this masking result. Op. at 10; emphasis added.

* * *

> EMI states that the '943 claims do not exclude Intel's deposit of additional oxide on the *top* of the game to add to the masking effect of the grown oxide. Op. at 11; emphasis added.

* * *

> Although it is undisputed that Intel's grown oxide is also "relatively thicker" on the gate, it was stipulated that it is not thick enough to mask the top during ion implantation, and requires a supplemental deposit of dielectric material *for that purpose.* Op. at 13; emphasis added.

* * *

> EMI states, and Intel does not dispute, that the only difference is Intel's use of a composite dielectric of grown and deposited oxide *on top of the gate,* to *mask* the gate *during implantation* of the source/drain region. Op. at 18-19; emphasis added.

* * *

> EMI states that Intel's implant mask on the *top* of the gate electrode is the equivalent of the mask of claim clause (b). . . . There is no dispute that this is what Intel does, and that it achieves the result of *masking the gate* electrode *during implantation* of the source/drain regions, as stated in the claim. Op. at 19; emphasis added

In fact, the panel has misunderstood Intel's accused process. Intel does **REDACTED** A3328. Intel masks implantation. *See* EMI'S opening brief at 13-14 and reply brief at 23-24.

Further, EMI never stipulated that because the oxide on top of the gate in Intel's process is not thick enough to mask the gate during implantation, it requires a supplemental deposit *"for that purpose."* Op. at 13. The stipulation, quoted at page 17 of the Opinion, only confirms that the oxide initially grown on top of the gate would not be thick enough by itself to mask the top of the gate from certain implants at the energy levels used in the process. It does not state that Intel masks the gate during the source/drain implantation with this oxide or anything else. Nor does the stipulation imply that an additional material is required on top of the gate in Intel's process *for the purpose* of masking the top of the gate during the source/drain implantation, as Intel's process **REDACTED**

As illustrated below on a reproduction of Intel's document A3328, with an added enlargement and added annotation (not to scale), the implant mask **REDACTED**

[Total Page] **REDACTED**

The opinion, therefore, misapprehends Intel's process as involving **REDACTED** and erroneously attributes to EMI a position that it never took – that a **REDACTED** gate *during the source/drain implantation,* and this is equivalent to claim 1 (thereby implying that claim 1 also requires masking the top of the gate during the source/drain implantation).

---

[2] Certain Intel processes (P652 and P852) **REDACTED** differential oxide growth step, but they were removed from the case earlier. *Thorn EMI North America, Inc. v. Intel Corp.,* 928 F.Supp. 449 (D.Del. 1996).

C. The Errors Were Outcome Determinative

In affirming the district court regarding the doctrine of equivalents, the Court stated:

> Notwithstanding our conclusion that cancellation of claims to certain composite masks, by itself, did not effect an estoppel with respect to Intel's accused processes, we have determined that the district court correctly interpreted the prosecution history as a whole in estopping EMI. EMI specifically argued that the differentially thermally grown oxide on *top* of the gate *masks* the gate *during the implant* deposition of claim step (d), in response to rejections on prior art. Op. at 22-23; emphasis added.

Thus, the Court's affirmance regarding infringement under the doctrine of equivalents is premised on an erroneous claim construction that limits claim 1 to requiring masking the top of the gate during implantation of the source/drain, which construction in turn is premised on: (1) the incorrect attribution to issued claim 1 of the limitation to implanting the source/drain "while such implant mask is on the top" of the gate, a limitation that EMI canceled from the early and different version of the claim several versions before allowance of claim 1; (2) the incorrect deduction that the reference to a "doped" gate in clause (a) of claim 1 implicitly requires masking the top of the gate during implantation of the source/drain; and (c) the mistaken belief that Intel's process **REDACTED** **REDACTED** source/drain implantation and that EMI argued claim 1 is equivalent (thus implying that the claim also requires masking the top of the gate during implantation of the source/drain). Affirmance regarding literal

infringement also is premised essentially on the same errors.[3]

Accordingly, petitioner submits that the errors are clear and substantial, and determined the outcome.

II. SUGGESTION FOR A REHEARING *IN BANC*

Based on my reasoned and studied professional judgment, I believe that to the extent the panel is relying on the canceled language of the early version of claim 1 and the attorney's argument to the Patent Office based on that language to limit issued claim 1 as discussed above, the panel's decision is contrary to this Court's precedent in *United States v. Telectronics Inc.*, 857 F.2d 778, 782-83 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989), which followed the Supreme Court's precedent in *Smith v. Snow*, 294 U.S. 1, 16, 55 S.Ct. 279, 285, 79 L.Ed. 721 (1935).

Accordingly, petitioner suggests a rehearing *in banc* to resolve the conflict.

---

[3] The panel's erroneous focus on dielectric on top of the gate also affects whether canceled application claims 8 and 23 are relevant, because they referred to a composite mask *on top*, not on the sides, of the gate. In all events, none of the dielectric on top of the gate in these claims was differentially thermally grown.

III. CONCLUSION

For the reasons stated above, EMI respectfully requests a rehearing and suggests a rehearing *in banc*.

Respectfully submitted,

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Dated: October 13, 1998

APPENDIX H

DEFENDANT/CROSS-APPELLANT
INTEL CORPORATION'S RESPONSE TO EMI'S
COMBINED PETITION FOR REHEARING
AND SUGGESTION FOR REHEARING *IN BANC*

UNITED STATES COURT OF APPEALS

for the

FEDERAL CIRCUIT

97-1137, -1153

EMI GROUP NORTH AMERICA, INC.

Plaintiff-Appellant,

v.

INTEL CORPORATION,

Defendant/Cross-Appellant.

APPEAL FROM DECISIONS OF THE
UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE
HONORABLE RODERICK R. MCKELVIE,
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CERTIFICATE OF INTEREST

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1. The full name of every party or amicus represented by me is:

Intel Corporation

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Not Applicable

3. The parent companies, subsidiaries (except wholly-owned subsidiaries), and affiliates that have issued shares to the public, of the party or amicus curiae represented by me are:

None

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I. INTRODUCTION

Contrary to EMI's petition, this Court's decision was not based upon importing a limitation into claim 1 requiring masking the gate during the implanting step (d). The Court affirmed the finding of no infringement by (1) interpreting the language of claim 1, step (b), to require growing a thick oxide on the top and sides of the gate to serve as an implant mask, (2) finding, based on the parties' stipulation, that Intel's processes do not grow such a

mask, and (3) finding an estoppel in Intel's favor based on amendments and arguments EMI made during prosecution to distinguish the prior art. Because EMI does not challenge these core findings and EMI agrees that Intel's processes do not have such a grown oxide, no reason exists to grant EMI's petition. The claim interpretation by the district court and this Court is perfectly consistent with the patent's claims and specification, the prosecution history, and the two cases EMI cites. Because the decision is eminently sound and unchallenged, rehearing will accomplish nothing except to permit EMI to reargue points the Court has already considered and rejected.

In a clever twist of words, EMI avoids this Court's actual holding and erects a "straw man" consisting of a claim interpretation that is not the basis for the decision. EMI then knocks down that "straw man" by pointing to certain language removed during prosecution. Noticeably absent from EMI's petition is any challenge to the claim interpretation the Court *did* make – namely, that step (b) requires the differentially thermally grown oxide be sufficiently thick by itself to mask ion implantation into the gate. For that reason alone, the Court should deny EMI's petition. At least three other reasons, however, compel denial of the petition.

First, the claim language itself requires that the oxide be grown "to serve as an implant mask . . . on both the top and sides of the gate." EMI's petition conveniently omits this claim language. Second, the arguments of the prosecuting attorney on which the Court's claim interpretation and finding of estoppel are based occurring throughout the prosecution, particularly those arguments with respect to the Steinmaier and Hunter references.

EMI focuses instead on one minor and irrelevant amendment concerning the "implanting" step (d) that has no bearing on the outcome of this case. This amendment does not require the Court to ignore the pertinent claim language and balance of the prosecution history. The cases of *Smith v. Snow*, 294 U.S. 1 (1935), and *United States v. Telectronics, Inc.*, 857 F.2d 778 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989), are not to the contrary. Third, EMI's argument serves merely as a pretext to rehash its claim construction arguments that were rejected by both the district court and this Court. EMI should not be permitted to seek rehearing on matters argued and lost during the original appeal.[1]

For these and the other reasons expressed herein, EMI's petition should be denied.

II. THE COURT'S PROPER CONSTRUCTION OF STEP (B) OF CLAIM 1 IS DISPOSITIVE

EMI's petition does not challenge the basis for the Court's dispositive claim construction on the "growing" step (b), or the prosecution history estoppel that accompanies that element. Instead, highlighting excerpts of the Court's decision (taken out of context), EMI suggests that the Court's holding was based on interpreting the claims

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[1] As one sister circuit court explained with respect to seeking rehearing, "Cases are not decided by timid panels who are in doubt of the result reached. Attempts to overcome deficiencies in the record or reiteration of previously rejected legal theories will not prompt a change of mind." *Westcot Corp. v. Edo Corp.*, 857 F.2d 1387, 1388 (10th Cir. 1988).

of the patent to mean that the oxide grown in the "differentially thermally growing" step (b) must remain on the gate during the later "implanting" step (d) of the claims. *The Court's holding was not based on such a finding.* Rather, the Court concluded that claim 1, step (b) requires the grown oxide be sufficiently thick by itself to mask ion implantation of the top and sides of the gate, and affirmed that Intel's processes do not meet this limitation literally or under the doctrine of equivalents. (Opinion at 17-18, 24).

EMI's petition not only ignores the fundamental reasoning of the Court, but conveniently omits the *actual claim language* at issue. The second element of the '943' patent claim provides as follows:

> (b) differentially thermally growing an oxide to serve as an implant mask having controlled thickness on both the top and sides of the gate electrode whereby a relatively thicker layer of oxide is developed on the top and sides of the gate electrode and a relatively thinner layer of oxide is developed on the intended source and drain regions of the substrate; then

By its terms, this element requires an oxide be differentially thermally grown of particular thickness "to serve as an implant mask . . . on both the top and sides of the gate electrode." The claim language itself thus belies EMI's suggestion that the limitation about the "top of the gate" was "cancelled" out of the claim. (Petition at 2). Moreover, EMI repeatedly relied on this element to distinguish the claimed method over the prior art, as the district court and this Court explained at length.

In order to understand the inconsequential nature of EMI's petition, it is useful to review the background of the case and the decision of the panel.

A. Background

The patent in question, U.S. Patent No. 4,486,943 (the " '943 patent") is directed to a particular method of fabricating metal oxide semiconductor field effect transistors, called "MOS transistors," used in the integrated circuits of computer memory and microprocessor chips. The '943 patent issued in a crowded field of art.

In accordance with the '943 method, "differential thermal growth" (a phrase given special meaning in the specification and during prosecution) is used to grow a thick oxide on the top and sides of the gate electrode. The resulting thick oxide serves as a mask against ion implantation, protecting the gate from ions and spacing the source and drain regions from the region under the gate electrode, as shown in Figure 1 of the patent. EMI described in the patent and prosecution history that "doping" the gate electrode prior to implantation promotes differential growth of the oxide.

The source and drain regions are then created in an ion "implanting" step, and a subsequent heating step drives the source and drain regions into alignment with the gate. Perfect alignment of the source/drain with the gate reduces capacitance, which can yield a faster transistor. The prior art already described driving a spaced source/drain implant into alignment with the gate to enhance speed. Consequently, the prosecution (described in the next section) focused on whether the applicants'

specific method for creating the implant mask rendered the claimed process patentable.

EMI accused several of Intel's processes of infringement of the '943 patent. The district court first granted summary judgment of non-infringement as to three of Intel's processes. That ruling was not appealed by EMI. Later, EMI withdrew assertion of most of the claims against the remaining Intel processes, leaving only claims 1-3 at issue. (District Court Opinion, Aug. 29, 1996 at 2, A12). Following an extensive *Markman* hearing, the district court granted summary judgment of non-literal infringement of the patent claims by Intel's processes, and, in a separate opinion, granted summary judgment on non-infringement under the doctrine of equivalents. These rulings were appealed by EMI.

This Court unanimously affirmed the district court's ruling. In its decision, the Court affirmed the district court's claim construction of claim 1, step (b), of the '943 patent claims as requiring that the grown oxide itself be thick enough on the top of the gate to mask ion implantation, without augmentation by a deposited dielectric. (Opinion at 9-15). In contrast to the claimed method, the Court found that Intel's processes do not grow an oxide on the top of the gate that is thick enough to mask ion implantation. (See stipulation, quoted at page 17 of the Opinion). Because the Intel processes do not differentially thermally grown an oxide as required by step (b) of the claims, the Court affirmed the ruling of no literal infringement. The Court held:

> Since we have confirmed the district court's ruling that claim 1 requires that the grown oxide on the top of the gate electrode must be sufficiently

> thick to mask implantation of the top of the gate, without augmentation with deposited dielectric, and in view of the stipulation quoted *supra*, we affirm that Intel's processes that are subject to this stipulation do not literally infringe claim 1. (Opinion at 17-18).

This Court also affirmed the finding of no infringement under the doctrine of equivalents. Like the district court, this Court concluded that during prosecution of the patent, EMI relinquished coverage of processes like Intel's that lack the "differentially thermally growing" element. (Opinion at 21). This conclusion on prosecution history estoppel was based on a detailed reading of the prosecution history and study of the reasons for the amendments and arguments.[2] The Court concluded:

> We thus affirm the district court's ruling that EMI is estopped to assert equivalency against Intel's combination of differentially thermally grown oxide and deposited dielectric on the gate when the differentially thermally grown oxide itself is not thick enough to mask the top of the gate from implant. EMI acknowledged to the examiner that, "Steinmaier is one of what must be a huge number of patents which relate to the formation of a transistor device," and in this congested art and in view of all of the cited references and the prosecution history, we agree

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[2] The Court considered the rule that not every amendment or argument prevents a finding of infringement under the doctrine of equivalents, and nonetheless found that under the circumstances an estoppel arose. (*See, e.g.*, Opinion at 20, citing *Litton Systems Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1455 (Fed. Cir. 1998), among other cases).

> that EMI is now estopped from asserting equivalency of Intel's composite dielectric, when the masking effect on the top of the gate is achieved only by an additional deposit of dielectric. The summary judgment of non-infringement under the doctrine of equivalents is affirmed. (Opinion at 24).

For present purposes, it is noteworthy that neither the district court's nor this Court's holdings of non-infringement turn on the construction of the subsequent "implanting" step (d) of the '943 patent claims. Nor do the holdings require that the thick oxide grown in step (b) actually remain on the gate during the later "implanting" step. Indeed, after being grown, the oxide can later be removed – if those employing the claimed process do not wish to benefit from the advantage of having the implant mask remain on top of the gate. The district court's decision made this clear:

> Thus, the claim language states that a grown oxide mask alone must be sufficient to block implantation. Furthermore, the prosecuting attorney, Edward Manzo, added in his First Proposed Amendment after Final Rejection the limitation that the mask must consist of a grown oxide, rather than a deposited oxide or other deposited material.
>
> TENA [EMI] merely seeks to clarify this part of the court's construction in light of an alleged ambiguity. TENA believes that this construction might imply that the oxide layer must remain on top of the gate during the implant of step (d). Intel has never asserted this contention. In fact, Dr. Chung specifically testified at the claim construction hearing that the oxide layer may be

> removed after it is grown. Moreover, requiring the oxide layer to remain on the top of the gate would be inconsistent with the anisotropic etching step in claim 1, which suggests that the oxide layer may be removed, and dependent claim 4, which explicitly requires the oxide layer to remain on the top of the gate. *Thus, to the extent the court's construction has caused any ambiguity, the construction is not meant to imply that the oxide layer must remain on top of the gate during implantation.*

(District Court Opinion, Aug. 29, 1996, at 12-13, A22-23, underscore original, italics added).

EMI conceded to this Court that if the district court's claim construction is affirmed, Intel does not literally infringe the claims. (Opinion at 17). EMI appears unwilling to live by that agreement.

B. The Prosecution History Supports the Court's Ruling

The prosecution history dispels any doubt that EMI's contentions are groundless. The PTO rejected amended claim 1 based on the combination of Cohen and the Hunter patent. A3991-93. Hunter, for example, taught forming an implant mask on the sides of the gate electrode by first forming an oxide on both the top and sides of the electrode, and then etching the oxide off the top. Because Hunter taught forming an implant mask at the sides of the gate, EMI amended all the claims to require

forming the implant mask on both the top and side of the gate electrode. A4014-18; Addendum A, A2482.1.[3]

For several claims (e.g., claims 3, 16, and 17) the patent applicants distinguished Hunter's prior art deposited oxide by further specifying the use of a differentially thermally grown oxide as the implant mask. The applicants defined such an oxide as one that is thick enough on the top of the gate electrode to prevent a subsequent implant from entering the gate. A4012, 4016-4018, 4022, 4027-4028. In its *de novo* review, the Court noted that the applicants amended step (b) to require forming an implant mask on top of the gate electrode to distinguish Hunter and the applicants argued that failure to totally mask the gate would result in a "severe problem." (Opinion at 12). These findings fully support the Court's conclusion that the grown oxide of claim 1, step (b) – which is "to serve as an implant mask . . . on both the top and sides of the gate" – must be thick enough to mask the top of the gate.[4]

The applicant's efforts to distinguish the Steinmaier reference from claim 1 likewise fully support the Court's claim construction. As shown in the figure below, Steinmaier described growing an oxide (21) on the top and

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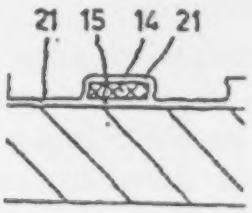
[3] Addendum A to Intel's appeal brief describes the evolution of claim 1 of the '943 patent.

[4] EMI's observation in its petition that a "severe" problem occurs only when the gate electrode is doped with a different type dopant from the one used for the implant misses the point. The important fact is that the applicants supported their claim modifications with an argument that the differentially thermally grown oxide provides a masking advantage over Hunter's deposited oxide.

sides of a polysilican gate (14) and over the silicon substrate (15) prior to an implant step:



The examiner found, and the applicants eventually accepted, that Steinmaier teaches growing a thermal oxide layer over the gate and substrate which is inherently thicker on the top and sides of the polysilicon gate than on the silicon substrate. A 4038. The claims were amended in multiple ways to overcome this third rejection. The applicants amended step (a) to require forming a "doped" polysilicon gate and step (b) to require forming the implant mask via the "differentially thermally growing" process. A 4048. When doing so, the applicants emphasized that doping the gate before the oxidation step enhances the thickness of the oxide on both the top and sides of the gate. For example, the applicants argued, "there is not even a clue in the Steinmaier patent that if the poly layer were doped prior to the formation of oxide layer 21, there would be an even thicker formation of oxide on the top and sides of the gate." A 4077. Equally important, the applicants argued that the oxide grown on the top and sides in Steinmaier was not differentially thermally grown as it was too thin to serve as an implant mask. A 4074, A 4077. Thus, consistent with the applicants' earlier definition of "differentially thermally grown

oxide," the applicants confirmed that the growing step produced an oxide having required thicknesses and ion implantation masking characteristics.

This Court correctly recognized the EMI argued these several differences between claim 1 and Steinmaier. This Court also correctly found that EMI distinguished claim 1's differentially thermally grown oxide from the gate covering structure Stoffel described and canceled claims covering composites of two dielectrics to mask the gate. EMI thereby relinquished coverage to a mask consisting in part of thermally grown oxide and in part of deposited material. (Opinion at 12-13, 21).

EMI's hindsight induced alternatives set forth in its petition for how the patent applicants distinguished Steinmaier are without merit. Contrary to EMI's representations, the applicants clearly distinguished Steinmaier on the basis of requiring a differentially thermally grown oxide, which the applicants defined as one having required thicknesses on the top and the sides of the gate. Both this Court and the district court independently reached the same conclusion.

In short, the Court's conclusion that "[i]n all events, it is clear" that the oxide grown on the top of the gate must be thick enough to serve as a mask for the gate for implantation is eminently correct. (Opinion at 14-15). Because the parties stipulated that Intel's processes do not include this required step, those processes do not infringe.

III. EMI'S REHASHED ARGUMENT RELATING TO WHETHER THE THICK OXIDE MUST REMAIN ON THE GATE DURING IMPLANT IS IMMATERIAL

In its petition, EMI does not contest that the Court properly interpreted claim 1, step (b). Nor does EMI dispute that the parties' stipulation, given this claim construction, establishes that Intel's processes do not literally infringe. Nor does EMI challenge the Court's conclusion that arguments and amendments made during the prosecution estop EMI from relying on the doctrine of equivalents to assert infringement against Intel's processes. Given the absence of a challenge to these findings, the Court should reject EMI's invitation to reargue claim construction.

The entire premise for EMI's petition is that the Court supposedly affirmed the district court's summary judgment by mistakenly requiring the oxide grown in step (b) remain on the top of the gate *during* the source/drain implant of step (d). As set forth above, and as is readily apparent from even a cursory reading of the claims and the Court's Opinion, the Court did not affirm the district court's decision on that basis. The Court affirmed the district court's decision because claim 1, step (b), requires growing an oxide thick enough to serve as an implant mask for the top and sides of the gate – not based on any finding that claim 1 requires such an oxide to remain on the gate at the time of implant. Although claim 1's open-ended "comprising" language gives the option of either leaving the oxide on or removing it, this does not change the fact that the oxide grown in step (b) must, *in the first instance*, be capable of serving as an

implant mask for the top and sides of the gate. (See Intel's Brief at 25-26).

During appeal, EMI argued that because claim 1 does not require the thick oxide grown in step (b) to remain on the gate during implant, claim 1, step (b) does not require such a thick oxide to be initially grown. (EMI's Opening Brief at 1, 16, 26-27). The Court understandably did not expressly address this bizarre argument. There is nothing unusual about a claim requiring the growth of a thick oxide, but permitting it to be either maintained or subsequently removed.

EMI also repeats the argument it raised on appeal about claim 4. That claim, which depends from claim 1, requires the grown thick oxide be left on the top of the gate during the implanting step (d). As Intel explained in its brief, claim 4 is just another indicia showing that claim 1, step (b), requires growing a masking oxide that is thick enough to block the implant from entering the gate. EMI continues to leave unexplained how this dependent claim can require the oxide to remain thick enough to mask the gate during the implanting step (d) unless step (b) first required growing an oxide that is at least that thick. EMI's re-pitch of these arguments here carries no more weight than when the Court rejected them during the original appeal.

IV. EMI'S PURPORTED "ERRORS" ARE NOT CONSEQUENTIAL

Since the underlying premise of EMI's petition is inaccurate and immaterial, the three purported "errors" on which that premise is founded bear nothing upon the

outcome. When carefully considered, EMI's criticism of the Court's Opinion does not raise any error at all. Rather, the alleged "errors" consist of isolated comments taken out of context from the Court's Opinion and serve only as a pretext to enable EMI to re-argue the claim construction issues it already lost.

The first of the three alleged "errors" relates to the applicant's removal early on in the prosecution of an express requirement that the implant mask remain on the top of the gate electrode during the subsequent implanting step. The limitation recited implanting the source/drain regions "while such implant mask is on the top and sides of the gate electrode." A3998, A4015-18.

This change is immaterial to the Court's decision. The Court's finding that the oxide grown in step (b) must be sufficiently thick to block the implant into the gate does not attribute to claim 1 a further requirement that the oxide must remain on the gate at the time of implant.[5] Therefore, this alleged "error" does not warrant rehearing. Nor is the Court's decision in conflict with *Smith v. Snow*, 294 U.S. 1 (1935), or *United States v. Telectronics, Inc.*, 857 F.2d 778 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989). The Court simply did not, contrary to EMI's misleading analysis of the Opinion, rely on arguments pertaining to limitations removed from the claims. The Court based its decision on the actual terms of step (b) and

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[5] For the same reason, the argument by the patent applicants during prosecution regarding this "while" language, that, according to EMI, was made "to distinguish over Hunter, not Cohen, and certainly not Steinmaier – a reference that had not yet been cited" (Petition at 5), is irrelevant.

appropriate consideration of the entire prosecution history as it relates to that step. *See Southwall Technologies, Inc. v. Cardinal Co.*, 54 F.3d 1570, 1583 (Fed. Cir.), *cert. denied*, 516 U.S. 987 (1995) ("the prosecution history must be examined as a whole in determining whether, based on a particular argument, a particular estoppel applies.")

The second alleged "error" relates to claim 1's requirement that the polysilicon gate be "doped" before the growing step (b). EMI explained to the Patent Office that doping the gate promotes the differential thermal growth of the oxide on the top and sides of the gate. In its petition, EMI isolates and dubs "erroneous" the Court's statement that step (a)'s requirement of a previously doped gate implicitly requires masking of the top of the gate during implant of the source and drain regions. This aspect of the Court's Opinion, however, is not material to the holding of non-infringement. As stated previously, the Court did not affirm the district court's decision based on an interpretation that the thick grown oxide must remain on the gate during the later "implanting" step (d).

In its third alleged "error," EMI similarly criticizes the Court's statement that Intel masks the top of the gate "during implantation." EMI's commentary leaves us with the same burning question – so what? What matters is the parties' stipulation, where *EMI conceded that the grown oxide in Intel processes could not serve as a mask.* Whether Intel's composite mask ultimately remains on the gate during the later implantation of the source drain is not relevant to the analysis.

Finally, EMI quips that "requiring the oxide layer to remain on top of the gate would be inconsistent with the anisotropic etching step in claim 1." (Petition at 9). Since claim 4 requires the grown oxide to remain on the gate even after the anisotropic etch step, these process steps are completely consistent. This is another assertion by EMI that just doesn't make sense.

EMI is, of course, correct that the district court found claim 1 did not require the top of the gate to be masked by the grown oxide during the later source/drain implantation step. A22-23. The district court's ruling of non-infringement was made *assuming* that this was the case. *Id.* EMI is equally correct that Intel did not contest this. This "concession," as EMI puts it, however, is entirely beside the point. Despite EMI's myopic reading of the Opinion, no decision has been based on the requirement that the oxide grown in step (b) remain on the gate during the subsequent implantation step (d) or any other step for that matter. EMI's argument is immaterial to the proper construction of step (b) of the claims, as evidenced by both the district court's and this Court's decisions.

V. CONCLUSION

For the foregoing reasons, Intel respectfully requests that the Court deny EMI's petition for rehearing and suggestion for rehearing *in banc*.

Respectfully Submitted,

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APPENDIX I

CONFIDENTIAL REPLY BRIEF FOR APPELLANT EMI GROUP NORTH AMERICA, INC.

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

APPEAL Nos. 97-1137, -1153

EMI GROUP NORTH AMERICA, INC.,

Plaintiff/Appellant,

v.

INTEL CORPORATION,

Defendant/Cross-Appellant.

APPEAL FROM AN ORDER AND JUDGMENT OF THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE IN 95-CV-199 ENTERED NOVEMBER 1, 1996, AND NOVEMBER 4, 1996, JUDGE RODERICK R. MCKELVIE

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II. THE PROSECUTION HISTORY DOES NOT ESTOP EMI FROM ASSERTING CLAIM 1 AGAINST PROCESSES WITH "COMPOSITE IMPLANT MASKS"

The premise of Intel's prosecution history estoppel theory, and the district court's opinion, is that the application for the '943 Patent included claims 8 and 23 that were directed to "composite implant masks," and that these claims were canceled in light of the prior art, thereby estopping claim 1 from covering "composite implant masks." [Red Br. 12].

* * *

A. Canceled Claims 8 And 23 Were Never Directed To A "Composite Implant Mask"

* * *

With respect to the prior art (the Hunter, Steinmaier and Stoffel patents), the Applicants made no argument that would lead a competitor to believe that the Applicants gave up the subject matter of an implant mask on the sides of the gate electrode, where the implant mask is a composite of a first layer of differentially thermally grown oxide and a second dielectric. *American Permahedge, Inc. v. Barcana, Inc.*, 41 USPQ2d 1614, 1619-20 (Fed. Cir. 1997) (stating that a competitor reading the file history must be able to reasonably rely on the representations of the applicants). The cancellation of claims 8 and 23, as described above, shows a competitor that claim 1, as amended, recites a process that requires a differentially thermally grown oxide to serve as an implant mask on the sides of the gate electrode. The prosecution history would not lead a competitor to believe that the implant mask of claim 1 is limited to *only* a differentially thermally grown oxide, thereby excluding any additional steps or enlargements of the implant mask. The Applicants made no such statements, nor can any be implied or reasonably relied upon by a competitor.

* * *